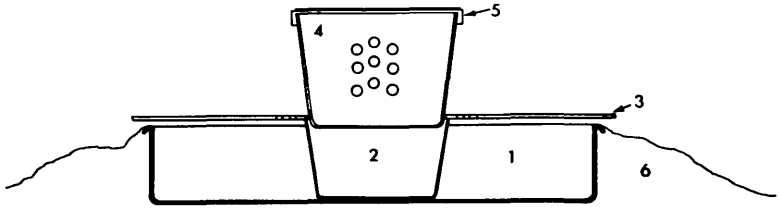

FIG. 2. The assembled dry-ice trap buried in soil to the level of the rim of the enamel pan. (See text for explanation of parts.)

into and supported by the plastic plate. The enamel pan containing the assembled components is buried so that the rim is level with the surrounding soil (Item 6).

A comparison of the unattended CO_2 trap and the CO_2 continual-surveillance hand-pick-up methods was made at several collection sites on the University of California Hopland Field Station in Mendocino County, California. Collection sites were concentrated at resting areas of deer and cattle and on game trails.

On 1 occasion, 4 hr of continuous surveillance of scattered small blocks of dry ice by 3 individuals resulted in the collection of 206 adult and nymphal *O. coriaceus*. Immediately thereafter, 6 CO_2-baited traps were placed at the same site and left overnight. The next morning 596 adult and nymphal ticks were present in the traps. All stages of *O. coriaceus* were attracted to the traps. The largest number of adults and nymphs collected in a single trap was 148 individuals, while an excess of 200 larvae were found many times in a single trap. All stages of *O. coriaceus* were unable to crawl up the side of enamel or metal pans; however, Ixodidae, such as *Dermacentor* species, were able to escape from the traps. On several occasions traps were left at a site and baited with dry ice at 2-week intervals; the areas were not depleted of ticks during the first 2-week period, since the 2nd trapping yielded considerable numbers of ticks.

The collection of nearly 4000 *O. coriaceus* ticks from a typical western chaparral habitat indicates that an effective and economical CO_2 tick trap has been developed. The components of the trap are inexpensive, readily available and lightweight for transport without motor vehicles. One person easily carried and attended 12 traps which were usually placed for overnight collections. Ticks contained in the traps were viable, dry and not frozen, because there was no opportunity for direct contact with the dry ice. Considerable numbers of larvae were obtained with the traps, while none was collected by the continual-surveillance hand-pick-up method.—**Yoshiaki Hokama** and **J. A. Howarth,** Department of Epidemiology and Preventive Medicine, University of California, Davis, California 95616, U.S.A.

J. Med. Ent. Vol. 13, no. 4–5: 628 31 January 1977

CATTLE BITING LOUSE, *BOVICOLA BOVIS* (MALLOPHAGA: TRICHODECTIDAE), PHORETIC ON THE HORN FLY, *HAEMATOBIA IRRITANS* (DIPTERA: MUSCIDAE)[1]

Adult horn flies, *Haematobia irritans* (Linnaeus), were collected from purebred Angus and Hereford cattle in the vicinity of College Station, Texas, during the spring and summer of 1975 to supplement laboratory production of ova needed for routine bioassay procedures. During the subsequent separation of horn flies from other fly species, 3 individuals were observed bearing phoretic cattle biting lice, *Bovicola bovis* (Linnaeus). One adult female louse and 1 nymph were attached by their mandibles to the abdominal integuments of a male and a female horn fly, respectively. A 3rd specimen, also an adult female, was observed unattached on the thorax of a female horn fly. Although peak population densities of these 2 bovine parasites occur on the host at different times of the year and only 3 such associations were observed among several thousand horn flies examined, this previously unrecorded mallophagan phoretic relationship (Keirans, 1975, J. Med. Ent. **12:** 476) may allow the cattle biting louse a secondary, although minor, mode of dispersal.—**D. E. Bay,** Department of Entomology, Texas A&M University, College Station, Texas 77843, U.S.A.

[1]Approved for Technical Article no. 12624, Texas Agriculture Experiment Station. This research was conducted in cooperation with the Agricultural Research Service, USDA.